

REMARKS

The present application includes Claims 1-22. Claims 7-13, 16-19, and 22 were allowed by the Examiner. Claims 1-6, 14-15, and 20-21 were rejected by the Examiner. Claims 14-15 and 20-21 have been amended by this response.

Claims 14 and 20 have been amended to recite “wherein said motion pattern of the energy source includes a radial component” and Claims 15 and 21 have been amended to recite “wherein said motion pattern of the energy source includes an angular component.” Accordingly, the Applicant respectfully submits that Claims 14-15 and 20-21 are in condition for allowance.

Claims 5-6, 14-15, and 20-21 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Examiner noted that Claims 5-6 and 20-21 fail to further define the structure recited in Claims 1 and 18, respectively. Additionally, the Examiner noted that the structural limitations conveyed by “electron beam radius” in Claims 14 and 20 and “electron beam angle” in Claims 15 and 21 are unclear.

Claims 5 and 6 further define the structure of the phantom recited in Claim 1 by relating the configuration of the pins in the phantom to the position of the detector elements in the imaging system and to the motion pattern of the energy source in the imaging system, respectively. In particular, with regard to Claims 5 and 6, the present invention teaches that “the pins are placed roughly in a circle and are aligned along an axis of the detector array” (paragraph 31). Furthermore, the present invention discloses that “imperfections or inaccuracies in the system ... include errors in detector position or

mischaracterization of the motion of the beam spot" (paragraph 30), and teaches that "multiple pins enable the phantom to triangulate on system components, such as the detector array and the individual detectors" (paragraph 31) and that "calibration ... provides an accurate description in radius and angle of beam spot motion" (paragraph 45).

Additionally, as previously discussed, Claims 14 and 20 have been amended to recite the structural limitation, "wherein said motion pattern of the energy source includes a radial component," and Claims 15 and 21 have been amended to recite the structural limitation, "wherein said motion pattern of the energy source includes an angular component." In particular, with regard to Claims 14-15 and 20-21, the present invention teaches that "the electron beam may be swept along a 210 degree arc to produce, at each spot along the arc, a fan beam of x-rays" (paragraph 28). The present invention also teaches "describing the motion of the electron beam ... in radius and angle, for example" (paragraph 50). Accordingly, the Applicant respectfully submits that Claims 5-6, 14-15, and 20-21 are in condition for allowance.

Claims 1 and 3-6 were rejected under 35 U.S.C. § 102(b) as being anticipated by Vinegar et al. (U.S. Patent No. 4,613,754). Vinegar relates to calibration of an image. In particular, Vinegar discloses a phantom "for calibrating the density and/or effective atomic number of the material being analyzed" (column 4, lines 24-26). Vinegar also discloses that the phantom should be made of materials with "known densities and effective atomic numbers" (column 5, lines 40-41). Conversely, the present invention relates to calibration of an imaging system. In particular, the present invention teaches a phantom for calibrating the position of detector elements in an imaging system. Claim 1

specifically recites the limitation “to enable computation of detector element positions of an imaging system.” Unlike the present invention, Vinegar does not teach or disclose a phantom for calibrating the position of detectors in an imaging system. Accordingly, the Applicant respectfully submits that independent Claim 1 and dependent Claims 3-6 are in condition for allowance.

Claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Vinegar (U.S. Patent No. 4,613,754) in view of Negrelli (U.S. Patent No. 5,712,895). Similar to Vinegar, Negrelli relates to calibration of an image. In particular, Negrelli discloses a phantom for correcting image misalignment “due to ... the mechanics of rotating the gantry” (column 5, lines 44-45) or, in other words, the forward and reverse rotation of the energy source and the detector with respect to the phantom. Unlike the present invention, Vinegar, as previously discussed, and Negrelli do not teach or disclose a phantom for calibrating the position of detectors in an imaging system. Accordingly, the Applicant respectfully submits that Claim 2 is in condition for allowance.

Therefore, the Applicant respectfully submits that Claims 1-22 are in condition for allowance.

CONCLUSION

The Applicant respectfully submits that the present application is in condition for allowance. The Applicant thanks the Examiner for his work in examining the application and the prior art. If the Examiner has any questions or the Applicant can be of any assistance, the Examiner is invited and encouraged to contact the Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of GTC, Account No. 070845.

Respectfully submitted,

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